

Master's Thesis

Regenerating Codes with Locality

Distributed data storage systems need to be able to tolerate the failure of servers without data loss. To maintain this tolerance, newcomers replace failed servers by downloading the required data from the surviving nodes. This repair process can put severe strain on the system and in recent years several coding theoretic measures have been introduced to mitigate this effect. The most promising approaches are codes with locality, where a small number of surviving nodes suffices for repair in most failure events, and regenerating codes, where the amount of data downloaded for repair is minimized.

This thesis will investigate the combination of advanced constructions of codes with locality and regenerating codes, with the goal of designing codes for storage systems that allow for efficient repair with respect to both, the number of servers involved in repair and the the amount of data downloaded.

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